

Appl. No. 09/925,769  
Amdt. Dated October 4, 2004  
Reply to Office Action of August 18, 2004

**Amendments to the Claims:**

**Listing of claims:**

1 to 5 cancelled.

6. (Original) A decoder for decoding encoded data wherein identical frames may be obtained even when they are predicted using different reference frames, said decoder comprising: means for forming a prediction block P of a current block of data I using a plurality of motion vectors and a reference frame; means for calculating a plurality of transform coefficients  $c_{sub.pred}$  for said prediction block; means for calculating a plurality of quantized reconstruction coefficients  $l_{sub.rec}$  for said current block of data, wherein  $l_{sub.rec} = (c_{sub.pred} \cdot A(QP1) + l_{sub.err} \cdot F(QP1, QP2) + f \cdot 2^{sup.20}) / 2^{sup.20}$  where  $F(QP1, QP2) = (2^{sup.20} \cdot A(QP1) + 0.5 \cdot A(QP2)) / A(QP2)$ ; means for dequantizing said plurality of quantized reconstruction image coefficients, creating a plurality of dequantized coefficients  $d_{sub.rec}$ ; and means for inverse transforming said plurality of dequantized coefficients.

7. (Original) The decoder of claim 6 wherein means for calculating a plurality of quantized reconstruction coefficients  $l_{sub.rec}$  for said current block of data is comprised of: means for calculating reconstruction image coefficients  $c_{sub.rec}$  wherein  $c_{sub.rec} = c_{sub.pred} + \alpha(QP2) \cdot l_{sub.err}$ , wherein  $\alpha(QP2)$  is a quantization parameter dependent on the method of quantization and used QP value; and means for quantizing said reconstruction coefficients creating a plurality of quantized reconstructed image coefficients  $l_{sub.rec}$ .

8. (Original) The decoder of claim 6 or 7, further comprising means for normalizing said plurality of inverse transformed dequantized coefficients.

9. (Original) The decoder of claim 8, further comprising means for filtering said plurality of normalized inverse transformed dequantized coefficients.

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10 to 12 cancelled.

13. (Original) A method for decoding a frame of video data, comprising the steps of:  
forming a prediction of a current block of data using a plurality of motion vectors and  
a reference frame creating a predicted block; calculating a plurality of transform  
coefficients  $c_{sub.pred}$  from said predicted block; calculating a plurality of quantized  
reconstruction coefficients  $l_{sub.rec}$  for said current block of data using  
 $l_{sub.rec} = (c_{sub.pred} \times A(QP1) + l_{sub.err} \times F(QP1, QP2) + f \times 220 -$   
 $) // 2 \times 20$ , wherein  $F(QP1, QP2) = (2 \times 20 \times A(QP1) + 0.5 \times A(QP2)) //$   
 $A(QP2)$ ; dequantizing said plurality of quantized reconstruction image coefficients,  
creating a plurality of dequantized coefficients  $d_{sub.rec}$ ; and inverse transforming  
said plurality of dequantized coefficients.

14. (Original) A method for decoding a frame of video data, comprising the steps of:  
forming a prediction of a current block of data using a plurality of motion vectors and  
a reference frame creating a predicted block; calculating a plurality of transform  
coefficients  $c_{sub.pred}$  from said predicted block; calculating reconstruction image  
coefficients  $c_{sub.rec}$  wherein  $c_{sub.rec} = c_{sub.pred} + \alpha(QP2) \times l_{sub.err}$ ,  
wherein  $\alpha(QP2)$  is a quantization parameter dependent on the method of  
quantization and used QP value; and quantizing said reconstruction coefficients  
creating a plurality of quantized reconstructed image coefficients  $l_{sub.rec}$ ;  
dequantizing said plurality of quantized reconstruction image coefficients, creating a  
plurality of dequantized coefficients  $d_{sub.rec}$ ; and inverse transforming said plurality  
of dequantized coefficients.

15. (Original) The methods of claim 13 or 14, further comprising the step of  
normalizing said plurality of inverse transformed dequantized coefficients.

16. (Original) The method of claim 15, further comprising the step of filtering said  
plurality of normalized inverse transformed dequantized coefficients.

17. (Original) An encoder for encoding a frame of video data, comprising the steps  
of: means for forming a prediction of a current block of data using a plurality of  
motion vectors and a reference frame; means for calculating a plurality of transform

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coefficients  $c_{sub.orig}$  for said current block of data corresponding to a set of basis functions; means for calculating a plurality of transform coefficients  $c_{sub.pred}$  for said predicted block; means for quantizing said predicted block coefficients using quantization parameter  $QP=QP1$  creating a plurality of quantized prediction image coefficients;  $l_{sub.pred}$  means for calculating the prediction error coefficients using  $c_{sub.err}=c_{sub.orig}-l_{sub.pred} \cdot \alpha(QP1)$  wherein  $\alpha(QP1)=(2^{sup.20}+0.5 \cdot \text{times}.A(QP1))/A(QP1)$ ; and means for quantizing said prediction error coefficients.

18. (Original) A method for encoding a frame of video data, comprising the steps of: forming a prediction of a current block of data using a plurality of motion vectors and a reference frame; means for calculating a plurality of transform coefficients  $c_{sub.orig}$  for said current block of data corresponding to a set of basis functions; calculating a plurality of transform coefficients  $c_{sub.pred}$  for said predicted block; quantizing said predicted block coefficients using quantization parameter  $QP=QP1$  creating a plurality of quantized prediction image coefficients  $l_{sub.pred}$ ; calculating the prediction error coefficients using:  $c_{sub.err}=c_{sub.orig}-l_{sub.pred} \cdot \alpha(QP1)$ ; wherein  $\alpha(QP1)=(220+0.5 \cdot \text{times}.A(QP1))/A(QP1)$ ; and quantizing said prediction error coefficients.

19 to 24 cancelled.

25. (Original) A method of reconstructing blocks of encoded data comprising the steps of: forming a prediction  $P(x,y)$  of a current block using a plurality of received motion vectors and a reference frame; performing a forward transform on  $P(x,y)$  to obtain a set of transform coefficients  $c_{sub.pred}$  for  $P(x,y)$ ; quantizing said set of transform coefficients  $c_{sub.pred}$ , resulting in quantized prediction image coefficients  $l_{sub.pred}$ . adding said received quantized coefficients for the prediction error  $l_{sub.err}$  to  $l_{sub.pred}$  resulting in quantized reconstruction image coefficients  $l_{sub.rec}$  using:  $l_{sub.rec}=l_{sub.pred}+(\beta(QP2) \cdot \text{times}.l_{sub.err}+0.5 \cdot \text{time}-s.\beta(QP1))/\beta(QP1)$ . wherein  $\beta(QP)$  is a parameter dependent on method of quantization and used OP value; dequantizing  $l_{sub.rec}$  resulting in dequantized coefficients  $d_{sub.rec}$ ; and performing inverse transform for  $d_{sub.rec}$ .

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26. (Original) The method of claim 25, further comprising the step of normalizing said plurality of inverse transformed dequantized coefficients.

27. (Original) The method of claim 26, further comprising the step of filtering said plurality of normalized inverse transformed dequantized coefficients.